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| 09/997,906 | 11/30/2001 | Chin-Te Huang | 67,200-617 | 4738 |

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EXAMINER

JACKSON, ANDRE K

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| ART UNIT | PAPER NUMBER |
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2856

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/997,906

Applicant(s)

HUANG ET AL.

Examiner

André K. Jackson

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,7,8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of Masia et al.

Regarding claim 1, Suzuki et al. disclose in "Liquid leak sensor" a pair of electrical conductors in relative proximity to the fluid (1,3); at least one conductor (Figure 1) characterized by an electrical insulative porous sheath to provide electrical isolation of one electrical conductor from the other conductor (Figure 1) and indicates the position of the leak and differentiates oil and water (Column 1). Suzuki et al. disclose circuitry that measures a change in permittivity. However, Masia et al disclose in "Method for detecting and obtaining information about changes in variables" circuitry coupled to the electrical conductors effective to measure a resistance of electrical conductors and an electrical short where the resistance indicates the existence of a leak and the relative location of the leak of a liquid which is water or a hydrocarbon (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki et al. to include circuitry coupled to the electrical conductors effective to measure a resistance of electrical conductors and an electrical short where the resistance indicates the existence of a leak and the relative location of the leak. By adding this feature the apparatus would be able to accurately detect the position of the leak.

Regarding claim 7, Suzuki et al. do not disclose circuitry that measures ohms. However, Masia et al. disclose circuitry that measures ohms (Column 10). Therefore, it would have been obvious to modify Suzuki et al. to include circuitry that measures ohms. By adding this feature the apparatus would be able to accurately measure the resistance directly.

Regarding claim 8, Suzuki et al. do not disclose where the circuit has a voltage source and a current sensing circuit. However, Masia et al. disclose where the circuit has a voltage source and a current sensing circuit (22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki et al. to include where the circuit has a voltage source and a current sensing circuit. By adding this feature the apparatus would be able to accurately gauge the current and voltage to adjust accordingly.

Regarding claim 9, Suzuki et al. do not disclose where the circuit has a current source and a voltage sensing circuit. However, Masia et al. disclose where the circuit has a current source and a voltage sensing circuit (22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki et al. to include where the circuit has a current source and a voltage sensing circuit.

3. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masia et al. in view of Suzuki et al.

Regarding claim 13, Masia et al. disclose a pair of electrical conductors in relative proximity to the fluid; determining a resistance between at least one conductor and the other conductor; relating the resistance to one of a normal condition corresponding to the absence of a fluid induced electrical short between the conductors or a leak condition corresponding to the presence of an ionic fluid induced electrical short between the conductors and relating the resistance corresponding to leak condition to a location along the at least one of the pair of conductors (Abstract, figures 1-7). Masia et al. do not explicitly disclose where the electrical conductors are in proximity to the vessel. However, Suzuki et al. disclose where the electrical conductors are in proximity to the vessel (Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Masia et al. to

include where the electrical conductors are in proximity to the vessel. By adding this feature the apparatus would be able to detect leaks from a liquid holding container.

Regarding claim 14, Masia et al. disclose where a pair of electrical conductors in proximity to a fluid at least one of the electrical conductors being elongate and having a sheath of an electrically insulative and porous material (Abstract). Masia et al. do not explicitly disclose where the electrical conductors are in proximity to the vessel. However, Suzuki et al disclose where the electrical conductors are in proximity to the vessel (Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Masia et al. to include where the electrical conductors are in proximity to the vessel. By adding this feature the apparatus would be able to detect leaks from a liquid holding container.

Regarding claim 15, Masia et al. disclose circuitry that determines a resistance between the one pair of electrical conductors and the other conductor includes measuring a resistance in ohms (Column 10, lines 25-30).

Regarding claim 16, Masia et al. disclose where providing a predetermined current to the conductors and measuring a voltage through the conductors (Column 3, lines 20-27).

Regarding claim 17, Masia et al. disclose where providing a predetermined voltage to the conductors and measuring a predetermined current to the conductors (Column 3).

Regarding claim 18, Masia et al. disclose a pair of electrical conductors in proximity to a fluid at least one of the electrical conductors being elongate having a sheath of an electrically insulative and porous material; and determining a resistance between one of the pair of electrical conductors and other conductor; providing a voltage to the electrical conductors; measuring the other one of a voltage and current not provided to the pair of electrical conductors and determining from the voltage and current the measured voltage and current not provided in the existence and the location of a fluid induced electrical short (Abstract, Figures 1-7, Column 3). Masia et al. do not explicitly disclose where the electrical conductors are in proximity to the vessel. However, Suzuki et al. disclose where the electrical conductors are in proximity to the vessel (Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Masia et al. to include where the electrical conductors are in proximity to the vessel. By adding this feature the apparatus would be able to detect leaks from a liquid holding container.

Regarding claim 19, Masia et al. disclose determining the resistance and location of a fluid induced electrical short (Abstract).

Regarding claim 20, Masia et al. disclose where the resistance is measured in ohms (Column 10, lines 25-30).

4. Claims 2-6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of Masia et al. as applied to claim 1 above and in further view of Prince et al.

Regarding claims 2 and 4, Suzuki et al. do not disclose a drip tray. However, Prince et al. disclose in "Liquid level sensor" which describes a drip tray in conjunction with electrically conductive material (Pages 1-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Suzuki et al. to include a drip tray. By adding this feature the user would be aware of a leak on a smaller vessel since the liquid would be contained within a tray and not leaking on a floor.

Regarding claim 3, both Suzuki et al. and Masia et al. disclose where a pair of electrical conductors has a second insulated conductor characterized by an electrically insulated, porous sheath and being parallel in adjacency (Column 1 and Figure 7 respectively).

Regarding claim 5, both Suzuki et al. and Masia et al. disclose a pair of conductors having individually insulated conductors (Figure 1).

Regarding claim 6, Suzuki et al. disclose integrally insulated conductors (Figures 1).

Regarding claim 22, neither Suzuki nor Prince et al. disclose where the wire is laid out in a zigzag pattern. However, this considered a design

choice and well within the purview of the skilled artisan to place the conductors in a particular fashion such as a spiral configuration in order to cover most of the area of the tray to provide the user with a precise location and detection of the leak.

5. Claims 10,11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of Masia et al. as applied to claim 1 above and in further view of Gott.

Regarding claim 10, Suzuki et al. do not disclose where one insulated conductor comprise a chemically treated insulator that changes color when in contact with a liquid making the leak visible. However, Gott discloses one insulated conductor having a chemically treated insulator that changes color when in contact with a liquid making the leak visible (Column 2, lines 32-34). Therefore, to modify Suzuki et al. to include one insulated conductor having a chemically treated insulator that changes color when in contact with a liquid making the leak visible would have been obvious to one of ordinary skill in the art at the time of invention. By adding this feature the user would be able to see if there was a leak because the color change would making it possible to see from a distance.

Regarding claim 11, Suzuki et al. do not disclose where the insulator is treated with copper sulfate. However, Gott discloses one insulated conductor having a chemically treated insulator that changes color when in contact with a liquid making the leak visible (Column 2, lines

32-34). To make the chemical copper sulfate is considered a design choice and well within the purview of the skilled artisan since Gott discloses chemically treating the conductor for a color change.

Regarding claim 21, Suzuki et al. do not disclose determining the existence and location of a fluid induced electrical short between the conductors includes measuring a resistance is done using a computer. However, Gott does disclose a system computer (17), which is connected to the detection circuit (11) that determines the existence and location of a fluid induced electrical short between the conductors. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Suzuki et al. to determine the existence and location of a fluid induced electrical short between the conductors includes measuring a resistance is done using a computer since this would make the detection and location extremely precise.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of Masia et al. and Gott as applied to claim 1 above and in further view of Takahashi et al.

Regarding claim 12, Suzuki et al. do not disclose where one conductor is made of nichrome. However, Takahashi et al. disclose where one conductor is made of nichrome (Columns 13-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki et al. to include where one

conductor is made of nichrome. By adding this feature the apparatus would be able to conduct more efficiently.

7. Claim 23 is objected to as being dependent upon a rejected base claim.

Response to Arguments

8. Applicant's arguments with respect to claim 1-21 have been considered but are moot in view of the new grounds of rejection.

In response to applicant's argument that Gott uses exposed uninsulated, thin as possible conductors, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event

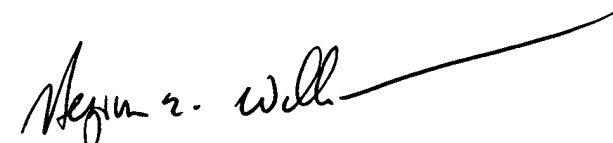
a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (571) 272-2196. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J. 
July 23, 2004


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